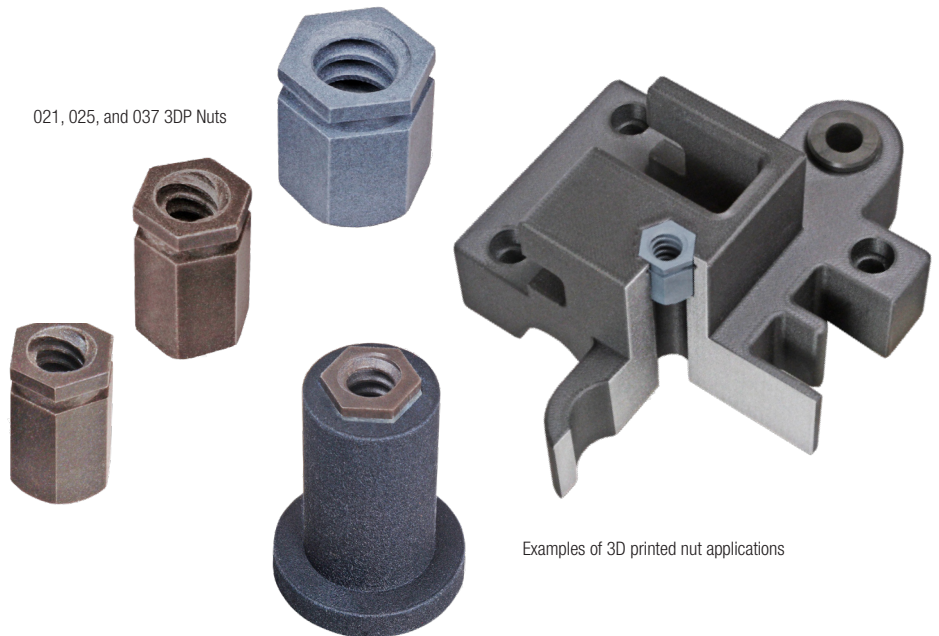


3DP Nut Series

Advanced technology for custom motion control prototype development. The 3DP nut offering is designed for rapid prototyping with additive manufacturing. One of the challenges with the current material offerings in 3D printing is the lack of low wear, low friction materials. For prototyping a lead screw driven assembly, it's critical to simulate the correct tribological performance of the lead nut solution to understand how the axis of motion will perform. By integrating basic anti-rotation, and axial locking features with our high efficiency thread form the 3DP nut allows for simple integration of a premium performance thread system into a 3D printed prototype. This gives engineers and developers a leg up on the competition by being able to quickly test several configurations while leveraging additive manufacturing and top performing lead nut materials. The result is shortened design cycle and rapid product launch to market allowing you to capture more market share with your latest and greatest solution.



021, 025, and 037 3DP Nuts

Examples of 3D printed nut applications

■ Grease Compatibility

Coatings	Compatible
Kerkote® TFE Coating	YES
Black Ice® TFE Coating	YES
Grease	YES

■ Technical Data

Material	Polyacetal with Lubricant Additive	Kerkite® KN30 High Performance Engineered Polymer
Tensile Strength	9,700 psi	25,000 psi
Coefficient of Expansion	6.0 x 10 ⁻⁵ in/in/°F	1.1 x 10 ⁻⁵ in/in/°F
Coefficient of Friction Polyacetal Nut to Screw	Static = .08 .08 ** Dynamic = .15 .09 **	
Standard Operating Temperature Range	32 - 200° F* (0 - 93° C)*	

*Very high or low temperatures may cause significant changes in the nut fit or drag torque. Please call the HKP Engineering Team at 603 213 6290 for optional temperature

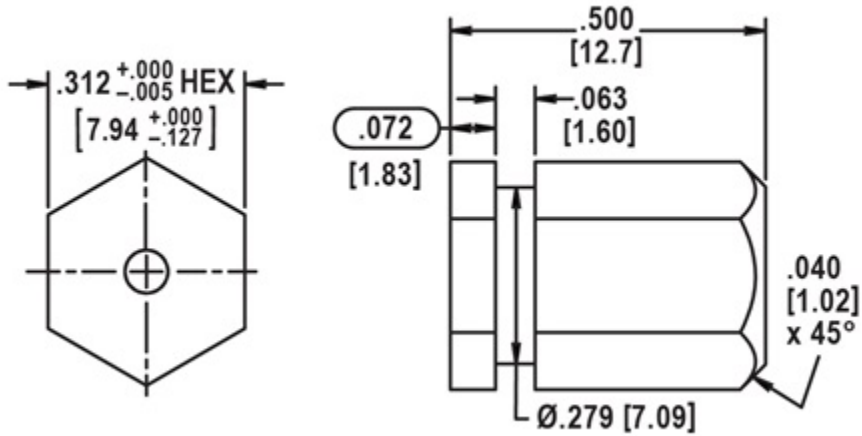
■ Identifying the 3DP Series Nut Part Number Codes when Ordering

3DP	H	K	R	012	0012	BZ00
Prefix	Nut Mounting Style	Lubrication	Thread Direction	Diameter Code	Nominal Thread Lead Code	Unique Identifier
3DP	H = Hex	S = Uncoated K = Kerkote® TFE Coating G = Grease N = Nut only B = Black Ice® TFE Coating	R = Right hand L = Left hand (Refer to leadscrew charts for availability)	012 = .125 in (3.2 mm) 013 = .133 in (3.3 mm) 014 = .141 in (3.6 mm) 016 = .156 in (4 mm) 018 = .188 in (5 mm) 021 = .219 in (5.6 mm) 025 = .250 in (6 mm) 037 = .375 in (10 mm)	(Refer to LEAD CODE Specifications charts, pages 3 to 4)	BZ00 = Acetal base with lubrication matrix KZ00 = Kerkite® KN30 high performance polymer BYXX = Standard acetal base hex nut and cut to length lead screw (XX = length in inches) KYXX = Kerkite® KN30 base hex nut and cut to length lead screw (XX = length in inches)

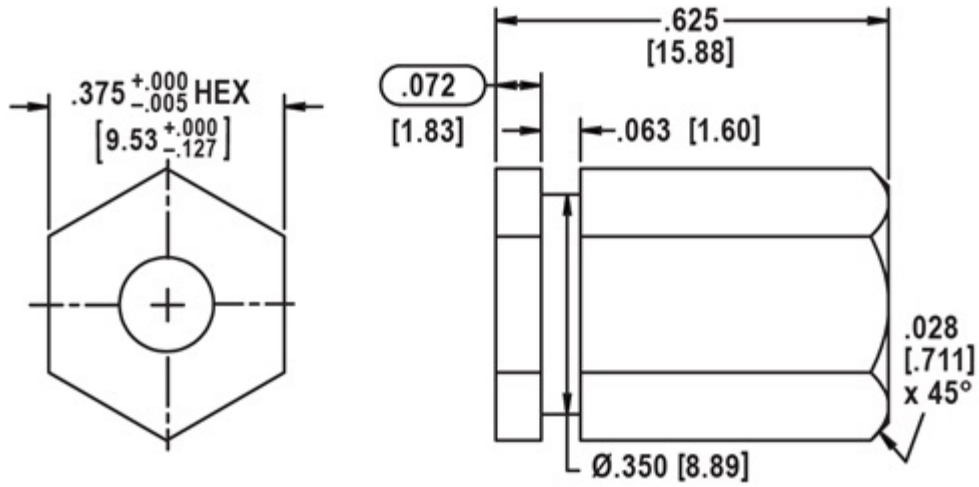
NOTE: Dashes must be included in Part Number (-) as shown above. For assistance call our Engineering Team at 603 213 6290.

■ Dimensional Drawings inch [mm]

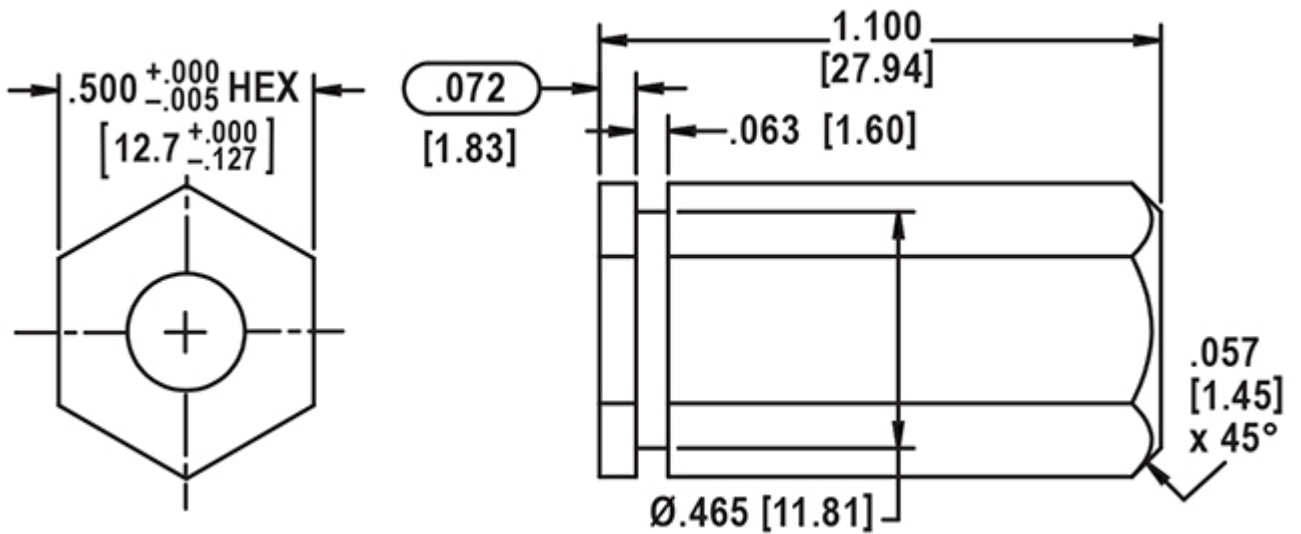
3DP Hex Nut: 012 to 021 Series



3DP Hex Nut: 025 Series



3DP Hex Nut: 037 Series



3DP Nuts Series - 3D Printed Prototype Nut

Lead Screw Compatibility: 3DP Series

Diameter		Diameter Code	Lead		LEAD CODE	Left Hand Available	Outside Diameter (for reference)		Root Diameter (for reference)		Efficiency %*
inches	mm		inches	mm			inches	mm	inches	mm	
1/8	3.2	012	0.024	0.61	0024		0.129	3.28	0.093	2.36	44
			0.039	1.00	0039		0.129	3.28	0.094	2.39	57
			0.048	1.22	0048		0.129	3.28	0.093	2.36	61
			0.075	1.91	0075		0.129	3.28	0.093	2.36	70
			0.096	2.44	0096	•	0.129	3.28	0.093	2.36	75
			0.125	3.18	0125	LH Only	0.125	3.18	0.078	1.98	80
.132	3.3	013	0.020	0.50	0020		0.132	3.35	0.104	2.64	42
			0.039	1.00	0039		0.132	3.35	0.080	2.03	61
			0.079	2.00	0079		0.132	3.35	0.080	2.03	75
			0.157	4.00	0157		0.132	3.35	0.080	2.03	84
			0.315	8.00	0315		0.132	3.35	0.080	2.03	87
9/64	3.6	014	0.012	0.30	0012		0.140	3.56	0.123	3.12	26
			0.024	0.61	0024		0.140	3.56	0.105	2.67	43
			0.048	1.22	0048		0.140	3.56	0.081	2.06	62
			0.096	2.44	0096		0.140	3.56	0.081	2.06	75
			0.394	10.00	0394		0.140	3.56	0.102	2.59	86
5/32	4	016	0.033	0.84	0033	•	0.156	3.96	0.116	2.95	45
			0.050	1.27	0050	LH Only	0.156	3.96	0.096	2.44	59
			0.094	2.39	0094		0.164	4.17	0.128	3.25	67
			0.125	3.18	0125		0.168	4.27	0.130	3.30	74
			0.250	6.35	0250		0.156	3.96	0.130	3.30	83
			0.375	9.53	0375		0.156	3.96	0.130	3.30	85
			0.500	12.70	0500		0.156	3.96	0.130	3.30	86
3/16	5	018	0.020	0.50	0020		0.188	4.78	0.163	4.14	30
			0.025	0.64	0025		0.188	4.78	0.150	3.81	39
			0.039	1.00	0039		0.188	4.78	0.144	3.66	47
			0.050	1.27	0050		0.188	4.78	0.124	3.15	58
			0.100	2.54	0100		0.188	4.78	0.136	3.45	69
			0.1875	4.76	0188		0.188	4.78	0.167	4.24	78
			0.200	5.08	0200		0.188	4.78	0.124	3.15	82
			0.375	9.53	0375		0.188	4.78	0.161	4.09	84
			0.400	10.16	0400		0.188	4.78	0.124	3.15	84
			0.427	10.85	0427		0.188	4.78	0.162	4.11	85
0.500	12.70	0500	•	0.188	4.78	0.142	3.61	86			
7/32	5.6	021	0.024	0.61	0024		0.218	5.54	0.181	4.60	31
			0.03125	0.79	0031		0.204	5.18	0.160	4.06	39
			0.048	1.22	0048		0.216	5.49	0.156	3.96	50
			0.050	1.27	0050		0.200	5.08	0.135	3.43	52
			0.0625	1.59	0063		0.218	5.54	0.142	3.61	60
			0.096	2.44	0096		0.218	5.54	0.156	3.96	66
			0.192	4.88	0192		0.218	5.54	0.156	3.96	78
			0.250	6.35	0250	•	0.204	5.18	0.140	3.56	81
0.384	9.75	0384		0.218	5.54	0.159	4.04	86			

Shaded areas have been translated from their designed inch or mm dimension to an equivalent mm or inch dimension.

* Listed efficiencies are theoretical values based on Kerkote® TFE coated lead-screw
 ** Listed efficiencies for Micro screws are theoretical values based on non-coated lead-screws

3DP Nuts Series - 3D Printed Prototype Nut

Lead Screw Compatibility: 3DP Series

Diameter		Diameter Code	Lead		LEAD CODE	Left Hand Available	Outside Diameter (for reference)		Root Diameter (for reference)		Efficiency %*
inches	mm		inches	mm			inches	mm	inches	mm	
1/4	6	025	0.024	0.61	0024		0.250	6.35	0.218	5.54	28
			0.025	0.64	0025		0.250	6.35	0.214	5.44	30
			0.03125	0.79	0031		0.250	6.35	0.208	5.28	34
			0.039	1.00	0039		0.250	6.35	0.190	4.83	40
			0.048	1.22	0048		0.250	6.35	0.190	4.83	45
			0.050	1.27	0050	•	0.250	6.35	0.191	4.85	46
			0.059	1.50	0059		0.250	6.35	0.172	4.37	52
			0.0625	1.59	0063		0.250	6.35	0.170	4.32	52
			0.079	2.00	0079		0.250	6.35	0.170	4.32	59
			0.096	2.44	0096		0.250	6.35	0.190	4.83	61
			0.100	2.54	0100		0.250	6.35	0.190	4.83	62
			0.118	3.00	0118		0.250	6.35	0.175	4.45	68
			0.125	3.18	0125		0.250	6.35	0.190	4.83	67
			0.197	5.00	0197		0.250	6.35	0.172	4.37	72
			0.200	5.08	0200		0.250	6.35	0.170	4.32	65
			0.250	6.35	0250	•	0.250	6.35	0.168	4.27	79
			0.3125	7.94	0313		0.250	6.35	0.184	4.67	81
			0.333	8.46	0333		0.250	6.35	0.170	4.32	82
			0.394	10.00	0394		0.250	6.35	0.170	4.32	78
			0.400	10.16	0400		0.250	6.35	0.170	4.32	84
0.500	12.70	0500	•	0.250	6.35	0.169	4.29	85			
0.750	19.05	0750		0.250	6.35	0.170	4.32	86			
1.000	25.40	1000	•	0.250	6.35	0.170	4.32	84			
3/8	10	037	0.025	0.64	0025		0.375	9.53	0.337	8.56	21
			0.039	1.00	0039		0.394	10.01	0.350	8.89	28
			0.04167	1.06	0042		0.375	9.53	0.320	8.13	34
			0.050	1.27	0050	•	0.375	9.53	0.301	7.65	36
			0.055	1.40	0055		0.375	9.53	0.303	7.70	38
			0.059	1.50	0059	•	0.389	9.88	0.313	7.95	38
			0.0625	1.59	0063	•	0.388	9.86	0.295	7.49	41
			0.068	1.73	0068		0.388	9.86	0.295	7.49	42
			0.079	2.00	0079		0.375	9.53	0.264	6.71	47
			0.0833	2.12	0083		0.375	9.53	0.293	7.44	48
			0.100	2.54	0100	•	0.375	9.53	0.266	6.76	53
			0.125	3.18	0125	•	0.375	9.53	0.295	7.49	59
			0.157	4.00	0157		0.375	9.53	0.274	6.96	65
			0.1667	4.23	0167		0.371	9.42	0.261	6.63	61
			0.197	5.00	0197		0.375	9.53	0.266	6.76	69
			0.200	5.08	0200	•	0.375	9.53	0.266	6.76	69
			0.250	6.35	0250		0.375	9.53	0.268	6.81	70
			0.300	7.62	0300		0.375	9.53	0.255	6.48	76
			0.333	8.46	0333		0.375	9.53	0.245	6.22	78
			0.363	9.22	0363	•	0.375	9.53	0.260	6.60	79
			0.375	9.53	0375		0.375	9.53	0.265	6.73	79
			0.394	10.00	0394		0.375	9.53	0.260	6.60	79
			0.400	10.16	0400		0.375	9.53	0.293	7.44	79
			0.472	12.00	0472		0.388	9.86	0.287	7.29	82
			0.500	12.70	0500	•	0.388	9.86	0.265	6.73	81
			0.667	16.94	0667		0.375	9.53	0.273	6.93	83
			0.667	19.05	0750		0.388	9.86	0.273	6.93	84
			0.984	25.00	0984		0.375	9.53	0.262	6.65	84
1.000	25.40	1000		0.383	9.73	0.254	6.45	84			
1.200	30.48	1200	•	0.383	9.73	0.254	6.45	84			
1.250	31.75	1250		0.375	9.53	0.278	7.06	84			
1.500	38.10	1500		0.375	9.53	0.264	6.71	83			

Shaded areas have been translated from their designed inch or mm dimension to an equivalent mm or inch dimension.

* Listed efficiencies are theoretical values based on Kerkote® TFE coated lead-screw

** Listed efficiencies for Micro screws are theoretical values based on non-coated lead-screws

■ Material & Teflon TFE Coating Options

Materials		Teflon TFE Coatings	
<p>Kerkite® Composite Polymer Nuts</p>	<p>In addition to the Kerk® self-lubricating acetal nut material, we offer a variety of custom compounded Kerkite composite polymers. Kerkite polymers are a family of high performance materials that offer exceptional wear properties with the cost and design advantages afforded through injection molding. Kerkite polymers offer a variety of mechanical, thermal and electrical properties and are compatible with many chemicals and environmental conditions. Each member of the Kerkite family is compounded with lubricants, reinforcements and thermoplastic polymers formulated to provide optimum performance in its target conditions and applications.</p>	<p>Kerkote® TFE Coating</p>	<p>Soft coating that is a long-term, maintenance-free, dry lubricant, optimized for softer plastics like acetals and nylons, with or without mechanical reinforcement. Lubrication to the nut/screw interface occurs by the nut picking up Kerkote® TFE particles from the coating as well as from the migration of the internal lubricant within the plastic nut. The transfer of TFE to the nut continues throughout the operating life of the assembly as long as the nut periodically travels over areas with Kerkote® TFE coating. The lubricant, although solid, also has some “spreading” ability as in fluid lubricants. Kerkote® TFE coated screws provide the maximum level of self-lubrication and should not be additionally lubricated or used in environments where oils or other lubricant contamination is possible.</p>
<p>Special Materials</p>	<p>Kerk® has rolled screws in many materials, including 316 stainless, 400 series stainless, precipitate hardening materials, carbon steel, aluminum, and titanium. Kerk® nuts have been produced in many alternative plastics including PEEK, polyester, Torlon®, Vespel®, PVDF, UHMW, Ertaloyte®, customer-supplied specialty materials, and metal nuts made from bronze, brass, and stainless steel. If the material can be molded, machined, ground, or rolled, we can likely process it.</p>	<p>Black Ice® TFE Coating</p>	<p>Hard coating that is long term, maintenance-free and is exceptionally durable in all types of environments, with virtually any type of polymer nut. Black Ice® TFE coating remains on the screw, offering a low friction surface upon which the nut travels. Rather than acting as a dry lubricant, Black Ice® TFE is an anti-friction coating whose surface properties displace the metal to which it is applied. Though it is not intended for use with metal or glass fiber reinforced nuts, Black Ice® TFE is bonded securely to the screw’s surface and can withstand abrasion from contamination, rigid polymer systems, fluid impingement and wash down applications. Black Ice® TFE can be used in more aggressive environment conditions, or anywhere reduced friction and a permanent coating is desired. Not intended to be used with additional lubricants.</p>

Note: There are certain applications where external lubrication may be desired. These include the use of nut materials such as glass reinforced plastic or metal. Greases, when used properly can provide unique capabilities and Haydon Kerk Motion Solutions does offer a selection of greases developed specifically for these applications. Please contact a sales engineer for assistance selecting the best lubricant for your requirements.